IN THE FIELD

Field Museum
Member Magazine

Vol. 96, No. 2
Summer 2025

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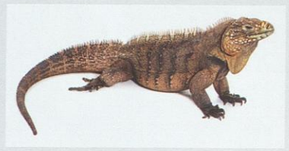

ON THE COVER
Meet Gwangi the Cuban rock iguana (*Cyclura nubila*) in *Reptiles Alive!*

Let us know your thoughts about *In The Field* magazine. Email your comments to ITF@fieldmuseum.org

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Dear Friends,

Summer is one of my favorite times of year at the Field Museum. The Rice Native Gardens are in beautiful full bloom, active with buzzing pollinators. Scientists are conducting field research that will shed light on the world around us. Field Explorers summer camps are introducing children to the wonders of the Museum. And our galleries are alive with members and visitors enjoying unforgettable experiences.

Our newest special exhibition is especially memorable: with 20 living reptiles from a panther chameleon to a reticulated python featured in the show, *Reptiles Alive!* marks the Museum's first foray into live animals in our exhibitions.

Reptiles Alive! also features the holotype for the fascinating spider-tailed horned viper (*Pseudocerastes urarachnoides*)—the only one in a museum in the western hemisphere, which you can now see on display for the first time (right). This exhibition combines so many elements of our work: comprehensive scientific collections, exceptional research, and storytelling that inspires visitors of all ages.

This is also "the Summer of SUE," celebrating the 25th anniversary of SUE the *T. rex* in Chicago. SUE and the spider-tailed horned viper represent just a few of many scientifically significant specimens at the Museum. Members play a crucial role in sustaining our collections and research.

This summer, I hope you will join us to explore the world of reptiles and to wish SUE a happy anniversary.

With gratitude for your support of the Museum,

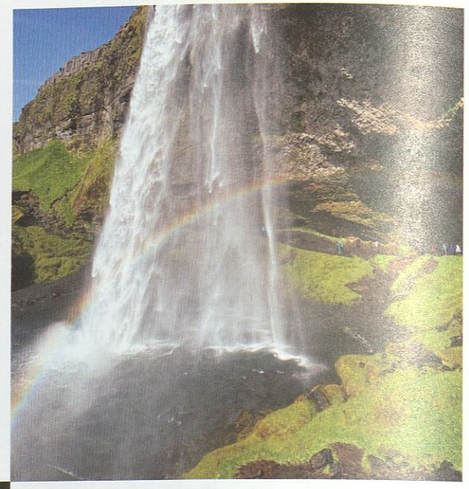
Julian Siggers

Julian Siggers, PhD
President and CEO

IN THE FIELD PHOTOGRAPHY CONTEST

ENTER NOW!

The Field Museum encourages everyone to connect with the natural world and the human story. What better way than snapping a stunning photograph of the nature that's all around us? Kids can participate too! For each category we will select a winner who is under 18 years of age in addition to an adult winner.



© LEXI LINDQUIST, 15, REAL-LIFE DIORAMA RUNNER UP, 2024

© MATTHEW ROSSO, REAL-LIFE DIORAMA RUNNER UP, 2024

CATEGORIES:

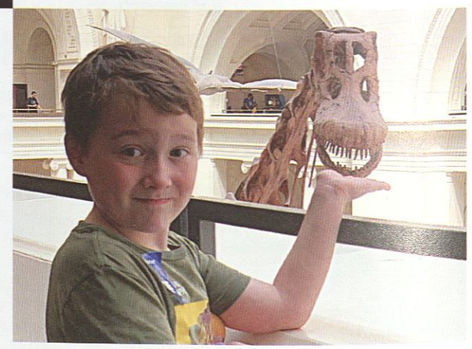
Urban Wildlife
Document the cooperation, or lack thereof, between the natural world and human made environments.

Real-life Diorama
Inspired by the Field's renowned taxidermy, portray animals and plants in their natural habitat. This category can include landscapes.

Museum Moments
There's so much to do and see at the Field Museum. Capture what inspires you about our collections, learning opportunities, and our historic lakeshore building. Portraits and candids of members and member families are encouraged with proper releases.

The contest is open now through Monday, August 4. **Scan the QR code or visit fieldmuseum.io/field-photo-contest** for more information about how to enter for a chance to have your work displayed in the Museum.

No purchase necessary. Open to Field Museum Members and their households ages 5 and up; participation by minors requires parental permission. Must be legal U.S. resident. Contest begins 04/07/2025 and ends 08/04/2025. Void where prohibited. Official rules available at fieldmuseum.io/field-photo-contest.



© ELLIOTT DOHERTY, 8, MUSEUM MOMENTS WINNER, 2024

SMALL BUT MIGHTY: NANOSCALE WATER RESERVOIRS ON THE MOON

BY PHILIPP HECK, PHD, SENIOR DIRECTOR, NEGAUNEE INTEGRATIVE RESEARCH CENTER; ROBERT A. PRITZKER CURATOR FOR METEORITICS AND POLAR STUDIES

A collaboration between scientists at the Field Museum, the University of Chicago, and Northwestern University, working with colleagues from Purdue University, has uncovered new insights into how water is formed and stored in lunar soil. Using a combination of advanced imaging and analytical techniques, the team studied several dust grains collected in 1972 during NASA's Apollo 17 mission. These grains, with varying levels of exposure to space weathering, revealed how the Moon's harsh environment alters the surface of planetary materials at the atomic scale.

This study was published in *Earth and Planetary Science Letters*, co-authored by myself, colleagues, and former University of Chicago Field Museum resident graduate student Jennika Greer, PhD, now a postdoctoral researcher at Chalmers University of Technology in Gothenburg, Sweden. The grains were collected by Apollo 17 astronaut Harrison "Jack" Schmitt, PhD, at Station 9, a trench dug into the regolith in the Moon's Taurus-Littrow valley.

We combined atom probe tomography performed at Northwestern University with transmission electron microscopy at Purdue University to probe the grains' structure and chemistry. Our analysis revealed that hydrogen from the solar wind—a stream of charged particles from the Sun—is implanted into the outer layers of lunar soil grains, where it interacts with the minerals to form water. We found that this water is stored in nano-scale vesicles within the grains, tiny bubbles that serve as stable reservoirs, preserving water across lunar day-night cycles and potentially over geologic time.

This technology to study lunar soil atom-by-atom in 3-D at the nanoscale wasn't available in 1972. We can address so many more questions today with the same samples the Apollo 17 crew collected.

These findings could have important implications for future lunar exploration and resource utilization. Nanoscale water reservoirs represent a potentially accessible source of water, besides water that exists as ice in permanently shadowed lunar polar regions. Future lunar explorers may rely on extracting water from the Moon for life support, fuel production, and possibly agriculture. Harvesting these sources would significantly reduce dependence on Earth-based supplies.

The research highlights the power of interdisciplinary collaboration across institutions and disciplines. Supported by NASA, this project builds on over a decade of partnership among the Field Museum, University of Chicago, Northwestern University, and the recent collaboration with Purdue University, advancing our understanding of planetary materials from the atom up.

© NASA

© NASA

(Left) The lunar rover during the Apollo 17 astronauts' field trip in Taurus-Littrow Valley on the Moon. AS17-146-22388.

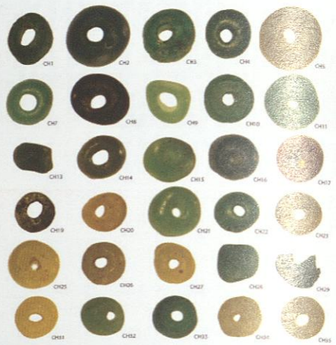
(Above) Trench from which the sample in this study came from. The Lunar Sample compendium, includes a description of the collected sample, and a partial transcript of the conversation between astronauts Schmitt and Captain Eugene Cernan as they collected the material in December 1972. Meyer C (2010) Lunar Sample Compendium, photo AS17-142-21829.

GLASS BEADS REVEAL ANCIENT TRADE

BY FOREMAN BANDAMA, PHD, ASSISTANT CURATOR OF AFRICAN ANTHROPOLOGY AND **LAURE DUSSUBIEUX, PHD,** SENIOR RESEARCH SCIENTIST AND ELEMENTAL ANALYSIS FACILITY DIRECTOR AND LAB MANAGER, NEGAUNEE INTEGRATIVE RESEARCH CENTER

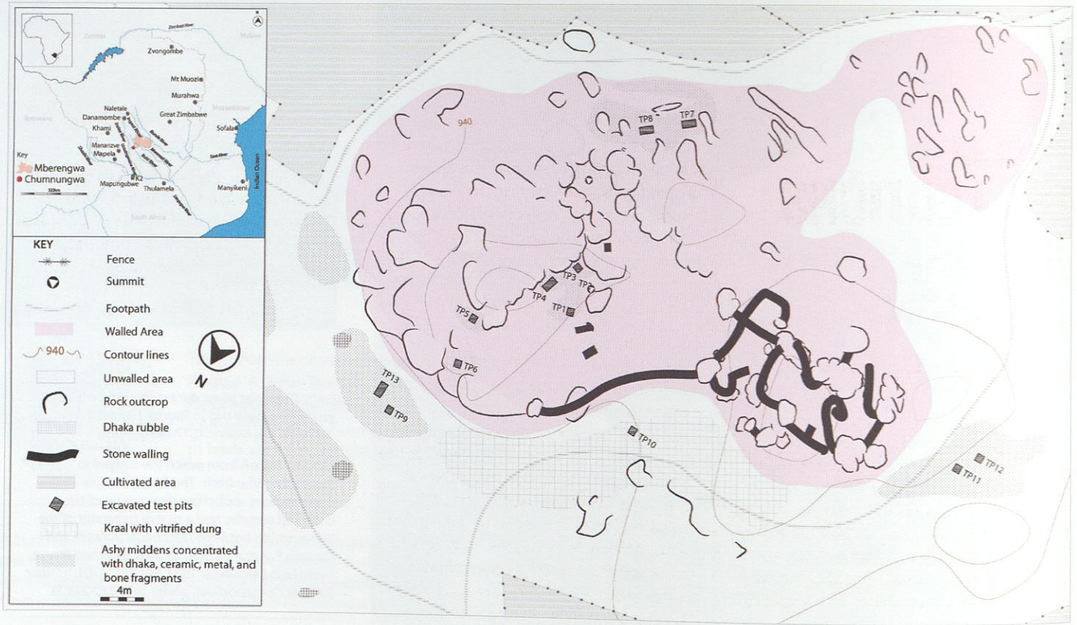
Glass beads are one of the rare forms of exotic objects frequently recovered at Iron Age (700–1900 CE) sites in southern Africa. These colorful beads have a long history of exchange in the region, brought in by Arab, Chinese, and European merchants as part of the Indian Ocean trade rim merchandise exchanged for local animal products, metals, and other commodities. The beads' deep history, typological attributes (like color, shape, and translucence), and chemical signatures that are traceable to Eurasia, make them essential in African archaeology for understanding the cultural-historical context of the pre-colonial societies that consumed them.

Our recent study in *African Archaeological Review*, co-authored with colleagues from South Africa, the US, and the UK, introduced new data on 59 glass beads from a newly excavated, and lesser known, Zimbabwe cultural site in the Mberengwa region of south-central Zimbabwe. Existing data on glass classifications from the region was fairly crude, having been based on very limited samples from large settlements like Great Zimbabwe. This new research, carried out in the Museum's Elemental Analysis Facility using Laser Ablation-Inductively Coupled Plasma-Mass Spectrometry (LA-ICP-MS), helped "fingerprint" the source of the glass to known regions in Eurasia, based on time-specific and region-specific recipes for glass manufacturing. We identified six glass bead types, five of which were fairly well known from the region—widely distributed Asian glasses dating from the 10th to 17th centuries (mineral soda/high-alumina and vegetable soda/high-alumina compositions). The sixth glass type was previously known from the East African coast, but Chumnungwa is the first site in southern African where it has been confirmed. We may find that other Zimbabwe culture sites in the region also possessed such beads, which may be identified as future research fine-tunes classification. But for now, all of these beads shed new light on the sources and circulation patterns of trade goods in southern Africa, particularly within a community situated beyond the well-known Iron Age sites like Great Zimbabwe.



(Above) A sample of the glass beads found at Chumnungwa that were part of the study.

(Below) Map and site plan of Chumnungwa where the beads in this study were found.



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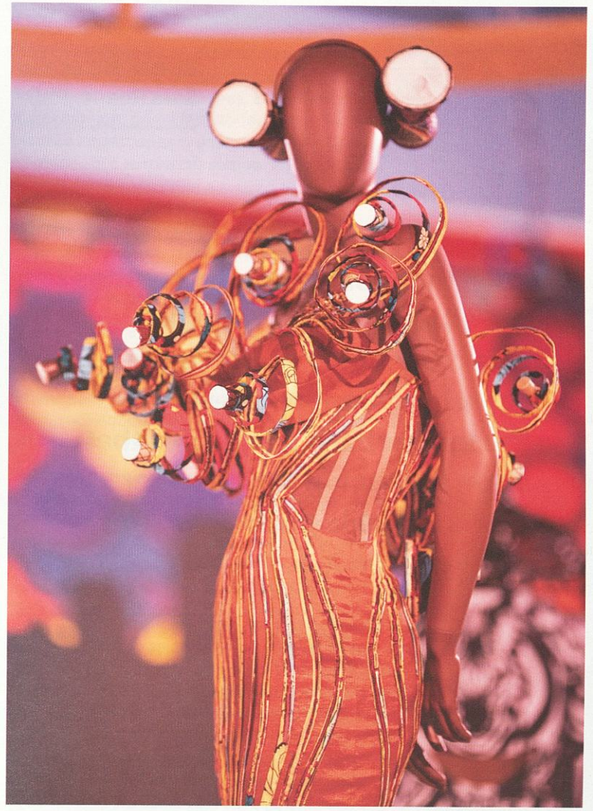

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(Left) "Beat of Your Own Drum" dress by Jennifer Akese-Burney.

(Below) See works by local Chicago artists in Connecting Threads: Africa Fashion in Chicago.

FIELD COLLECTIONS INSPIRE FASHION

BY ANGELICA LONDON, EXHIBITIONS PROJECT MANAGER

Connecting Threads: African Fashion in Chicago takes museum visitors on a journey into the vibrant and creative African fashion scene in Chicago. The exhibition introduces audiences to talented designers such as Stéphane St. Jaymes, Olivia Ogbara, and Jennifer Akese-Burney. Each designer highlights the rich diversity of African fashion, with a specific focus on those based in Chicago.

Jennifer Akese-Burney's designs stand out for their storytelling approach. In her "Transformation Collection," she draws inspiration from artifacts in the Field Museum's African collections. Her muses include intricate horse chest pieces, masks, combs, and baskets, all of which she interprets into striking fashion pieces that blend culture with contemporary style.

One of the standout pieces from the exhibition is the dress titled "Beat of Your Own Drum." In this piece, Akese-Burney strives to capture the powerful and graceful silhouette of the Djembe drum. She explains, "As a child, the sound of the Djembe was an invitation to celebrate! It reminds me of the happy faces and frolicking feet that danced to the rhythm of our African drum beat. A common value across Africa is to uphold family values and celebrate life through music." The dress embodies this celebration, fusing culture, rhythm, and fashion into a stunning visual narrative.

The exhibition offers a fresh perspective on African fashion and its influence on Chicago's fashion landscape. Visitors will encounter a rich variety of silhouettes, textiles, and creative expressions that reflect the immense diversity within African fashion. There is no singular fabric or shape that defines the continent's fashion; instead, it is a mosaic of styles, materials, and inspirations that come together to tell unique stories. African fashion, as demonstrated in this exhibition, is a testament to the creativity, culture, and history that shape the global fashion industry today.

Connecting Threads: Africa Fashion in Chicago was created by the Field Museum.

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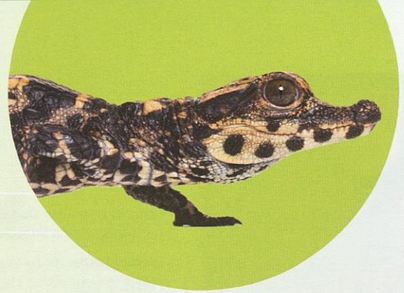


By Ben Miller and Sara Ruane, PhD

REPTILES ALIVE!

Love them or fear them, reptiles are all around us. From the Gila monsters that brave the scorching Sonoran desert to the leatherback sea turtles that swim in bracing Arctic waters, this is a reptile planet—we're just living on it.

The Field Museum's latest exhibition, *Reptiles Alive!*, takes visitors on a world tour of reptiles. Meet species of the desert, ocean, and tropics, then conclude your journey closer to home with a look at the snakes, lizards, and turtles of the upper Midwest. Along the way, encounter more than 20 live animals on loan from an Association of Zoos and Aquariums-accredited zoo in Allenwood, Pennsylvania. This visiting menagerie includes everything from a 14-foot-long reticulated python that dines on frozen rabbits once a month to a charismatic rock iguana that will likely greet each visitor with an agreeable head-bob.

Dozens of other species are represented by real museum specimens and life-like models. For example, the Field is the only museum in the western hemisphere with a spider-tailed horned viper in its collection. This elusive snake hails from the mountains of Iran, where it uses the spider-shaped lure on its tail to attract its avian prey. Elsewhere in the exhibition, come face-to-face with one the planet's largest apex predators—the American alligator—in a surprising setting: a Florida golf course. "When we drain a swamp to build more space for humans, we encroach on alligator habitat. That means we shouldn't be shocked when we find these reptiles living close to us—we're the ones in their homes," said Associate Curator of Herpetology Sara Ruane, PhD.

The exhibition also highlights Dr. Ruane and her research. A media program follows along with Dr. Ruane as she finds snakes and turtles around Chicago. The DNA samples she collects tell us more about their genetic diversity and help inform conservation programs.

Reptiles Alive! was created for visitors of all ages, so there are plenty of opportunities to touch, interact, and explore. Test your strength against the bite force of a Nile crocodile, "milk" the venom out of a gaboon viper model, and climb inside the shell of a Galápagos tortoise. You can even use a thermal camera to see their internal body heat—something that sets us mammals apart from most reptiles.

Visitors to *Reptiles Alive!* will gain an appreciation for all the evolutionary tricks these animals use to survive across the world's biomes. Reptiles are simply living their lives and are not out to get us. "I've caught thousands of snakes," said Dr. Ruane, "and none of them have approached me first."

(Top) Meet Smalls the Dwarf Crocodile (Osteolaemus tetraspis).

(Left) Discover snakes from all over the world like the emerald tree boa (Corallus caninus) which can be found across the rain forests of South America.

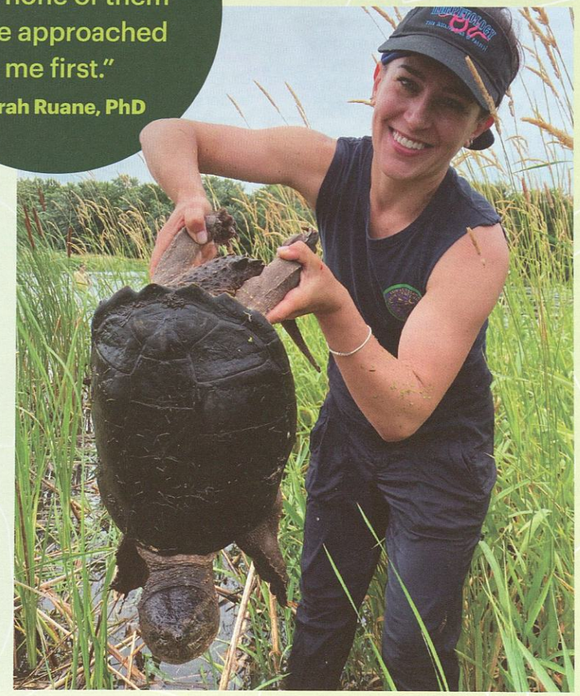
(Top, right) In Reptiles Alive!, *you can learn about different species of iguanas by examining hyper-realistic models of them, sculpted out of cellulose nitrate in the 1930's.*

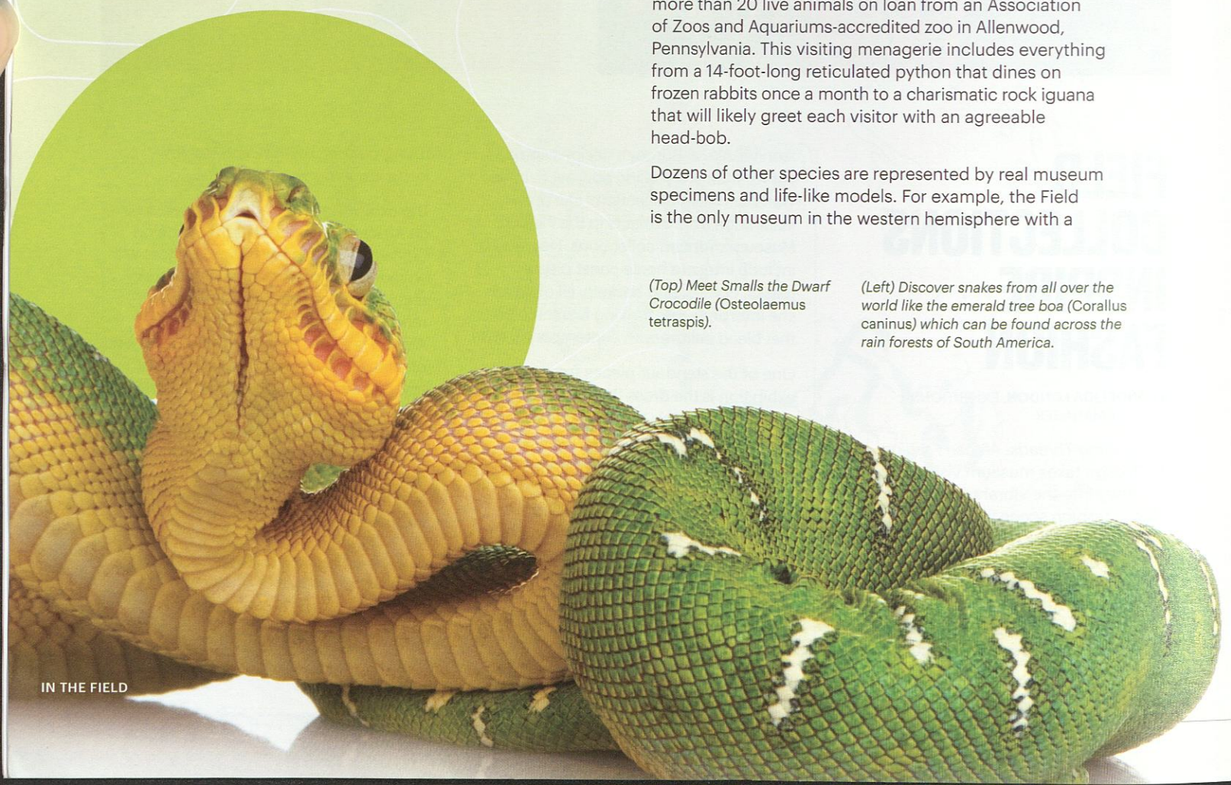
(Right) Sara Ruane, PhD with a snapping turtle (Chelydra serpentina) in Will County, Illinois

(Below) Gwangi, an amiable, 38-year-old Cuban rock iguana (Cyclura nubila), will live at the Field Museum during the exhibition.

ZEKE CORDEIRA

"I've caught thousands of snakes, and none of them have approached me first."
Sarah Ruane, PhD





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PLUNGE INTO THE *GRAINGER SCIENCE HUB*

BY RUDY ALBSMEYER, PUBLIC LEARNING EXPERIENCES DIRECTOR, SUE LING GIN CENTER FOR EDUCATION AND PUBLIC PROGRAMS

For Richard and Jill Chaifetz Associate Curator of Birds Shannon Hackett, PhD, a question arose while serving as the concussion monitor for her son's hockey team: How do kingfisher birds plunge-dive into the water without getting concussions?

The kingfisher family *Alcedinidae* comprises nearly 120 species of birds found across the globe. Despite the name, not all go fishing. Those that do are ambush predators, perching or hovering above water until a potential meal is identified. Kingfishers dive headfirst with precision, using their oversized, pointed beak to break the surface tension, submerge, and pluck their prey out of the water.

Plunge-diving is a high-risk, high-reward behavior. It has been identified in just five of the 250 avian families. Many kingfishers plunge-dive dozens of times per day, each time hitting the water at up to 25 mph. So to Dr. Hackett's question: what enables them to protect—or repair—their brains over a lifetime of repeated diving?

Previous studies found that plunge-diving has evolved independently at least four separate times within *Alcedinidae*. This convergence is significant because if you can find common traits among these diving lineages, a causal explanation has more power. Dr. Hackett and her team used the Field's collection to sequence the DNA of 30 kingfisher species (both divers and non-divers) to look for patterns. They identified a number of convergent genes across the plunge-divers, including adaptations to the eye, and to brain and beak shape. But convergence in one gene, MAPT, especially stood out. MAPT is involved in cognition and codes for Tau proteins in the brain, which help to keep neurons in order. Tau protein "tangles" have been noted in human studies surrounding repeated brain injury and neurodegenerative diseases. Dr. Hackett hopes that by better understanding MAPT and Tau proteins in birds, humans can take important steps in protecting our own brains from concussions just like kingfishers.

Kingfishers: Through Air and Water will be featured in the *Grainger Science Hub* through the end of the year. Observe and compare trait variations of kingfisher specimens, including our local Belted Kingfisher, the vibrant Indigo-banded Kingfisher, and the Shovel-billed Kookaburra. Then dive deeper into the Belted kingfisher diet by viewing a real preserved kingfisher stomach and examining a kingfisher "pellet," similar to the owl pellets you dissected in elementary school.

© JON MEISENBACH

*(Top) A Common Kingfisher (*Alcedo atthis*) prepares for its aerodynamic plunge-dive into water.*

*(Right) The exhibition features kingfisher species from around the globe, including our local Belted Kingfisher (*Megaceryle alcyon*).*

DISCOVER A FIELD FAVORITE

BY BILL LYNERD, MAJOR GIFTS OFFICER AND PLANNED GIVING MANAGER

On your next visit to the Field Museum stop by the *Grainger Hall of Gems* and take a look at the large stained glass window hanging over the cases of jewelry and minerals. Depicting a mermaid and fish, this window was created and owned by Louis Comfort Tiffany (1848–1933), who was the son of the founder of Tiffany & Co., and a painter and glassmaker. He invented techniques for combining colors and creating three-dimensional effects in stained glass. This window is thought to have been one of his favorites because it hung in his studio and he refused to sell it. After his death, the window was donated to the Field Museum by F.G. James of Cleveland, Ohio in 1941 and has been on display in the *Grainger Hall of Gems* ever since.

The Tiffany Window is designated as a Field Favorite of Life Trustee and Ayer Society Co-Chair Bob Loveman and his wife Gail. This program recognizes select unrestricted contributions by endowment donors and offers a wide-range of opportunities throughout the Museum. "The window was nearly invisible high on the wall of the pre-renovation Gem Room," said the Lovemans. "As part of the total renovation made possible by The Grainger Foundation, we were delighted to help finance the construction of an earthquake proof frame and the cleaning of the multiple layers of glass. The Tiffany Window is definitely a Field Favorite for us." The Loveman's have been wonderful friends of the Field since 1974, serving in a variety of volunteer and leadership roles.

A reconstruction of the oldest known gorgonopsian in life.

ILLUSTRATION © HENRY SUTHERLAND SHARPE

DISCOVER THE OLDEST SABER-TOOTHED ANIMAL!

BY KEN ANGIELCZYK, PHD, MACARTHUR CURATOR OF PALEOMAMMALOGY, NEGAUNEE INTEGRATIVE RESEARCH CENTER

Paleontologists have a love-hate relationship with gaps in the fossil record, when fossils of particular organisms are expected but have not been found. Charles Darwin famously grumbled about the problems such gaps caused when mustering evidence for his theory of evolution. Yet, we're drawn to these gaps because they represent opportunities for significant discoveries. An example of a persistent gap can be found in the fossil record of ancient mammal relatives (non-mammalian synapsids). An important group called Therapsida, which includes mammals as its living representatives, is thought to have evolved about 300 million years ago. However, the oldest therapsid fossils are only about 270 million years old, leaving 30 million years when therapsids are expected but have never been found. This gap likely relates to the geographic distribution of synapsid fossils. The oldest synapsids are only known from near the paleoequator during the Pennsylvanian and early Permian periods of Earth history. Therapsids are almost exclusively found in higher latitude areas like Russia and southern Africa in the middle and late Permian. Therefore, paleontologists have suspected that searching in new geographic locations might locate the "missing" therapsids.

Recently, I helped to describe a new therapsid that fills both the geographic and time gaps. The fossil comes from the Mediterranean island of Mallorca, which was located near the paleoequator during the Permian. Although fragmentary, it preserves numerous features that identify it as a saber-toothed, meat-eating therapsid known as a gorgonopsian. Its exact age is uncertain, but information preserved in the rocks about the polarization of Earth's magnetic field at the time the specimen was alive, as well as fossil footprints and fossil pollen grains found with the specimen, indicate that it is no younger than the current oldest known therapsids (approximately 270 million years), and very likely is significantly older (approximately 280 million years). Therefore, the specimen almost certainly is the oldest therapsid ever found, and it provides new information about early therapsid history.

The presence of this ancient therapsid near the paleoequator suggests the group originated in low latitudes, before later dispersing to higher latitudes. This observation helps to explain the absence of early therapsids in high latitude regions that have produced rich records of their later history. The specimen's gorgonopsian hallmarks indicate that divergences between major therapsid groups were well underway by about 280 million years ago, instead of happening during a short period of time about 270 million years ago as previously thought. The age of the specimen corresponds to a time of heightened extinctions among land animals. This coincidence hints that the diversification of early therapsids was facilitated by the extinction of previous competitors, with the group flourishing and expanding its geographic range during the recovery. Equally exciting, Permian vertebrate fossils were only discovered on Mallorca in the mid-2010's, so there is still great potential for more discoveries there about early therapsids.

REPTILES ALIVE! Explore the world of Reptiles with our family-friendly companion to the Field's newest exhibition.

How do you tell a **LIZARD** and a **SALAMANDER** apart?

When scientists are studying an animal they look closely at its features to determine what species it is. Sometimes it is easy to tell animals apart—like cats and dogs—but, sometimes it can be difficult. **Think like a scientist and look for clues to learn how to tell a lizard and salamander apart!**

LOOK CAREFULLY. **LIZARDS...**

- ☐ **Have scaly skin.** See the scales on my body and face?
- ☐ **Have toes with claws.** Nice and sharp for climbing!
- ☐ **Have dry skin.** You might have to touch me to feel that.
- ☐ **Lay eggs with dry shells.** We lay our eggs on land.
- ☐ **Have five front toes.** (Except for legless lizards!)
- ☐ **Are reptiles.** I'm related to snakes, turtles, and crocodiles.

LOOK CAREFULLY. **SALAMANDERS...**

- ☐ **Have smooth skin.** Scales? Nope, those are skin folds.
- ☐ **Have stubby toes.** They look kind of like your fingers!
- ☐ **Have moist skin.** It feels like a frog who just got out of the water!
- ☐ **Lay eggs with no shells.** We have to keep our eggs wet too.
- ☐ **Have four front toes.** (Unless we don't have legs!)
- ☐ **Are amphibians.** I'm related to frogs, toads, newts, and caecilians.

COLOR US!

Observe an Animal

Watching animals helps us better understand them. Scientists form hypotheses based on what they see animals doing in their environment, and then make even more observations that lead to discoveries.

Practice being a zoologist by observing the behaviors of our animal guests in *Reptiles Alive!* You can also practice this at home with pets or the animals in your backyard.

Observe each animal and write down what you see.

What behaviors do you see?

Why might the animal be acting this way?

What are you curious about when looking at these animals?

MAKE ME!

Make your own PAPER SNAKE!

Associate Curator of Herpetology Sara Ruane, PhD loves snakes! Explore her research in ***Reptiles Alive!*** and celebrate reptiles by making your very own.

WHAT YOU'LL NEED:

- ◯ **Construction paper**
- ◯ **Snake template (on reverse)**
- ◯ **Scissors**
- ◯ **Markers**
- ◯ **Glue stick or tape**

Instructions and snake template are on the back of this page! ⟶

DID YOU KNOW?

There are more than ***3,000*** species of snakes in the world. Which species of snake will you make?

I'm a *Morelia viridis*, more commonly known as a green tree python!

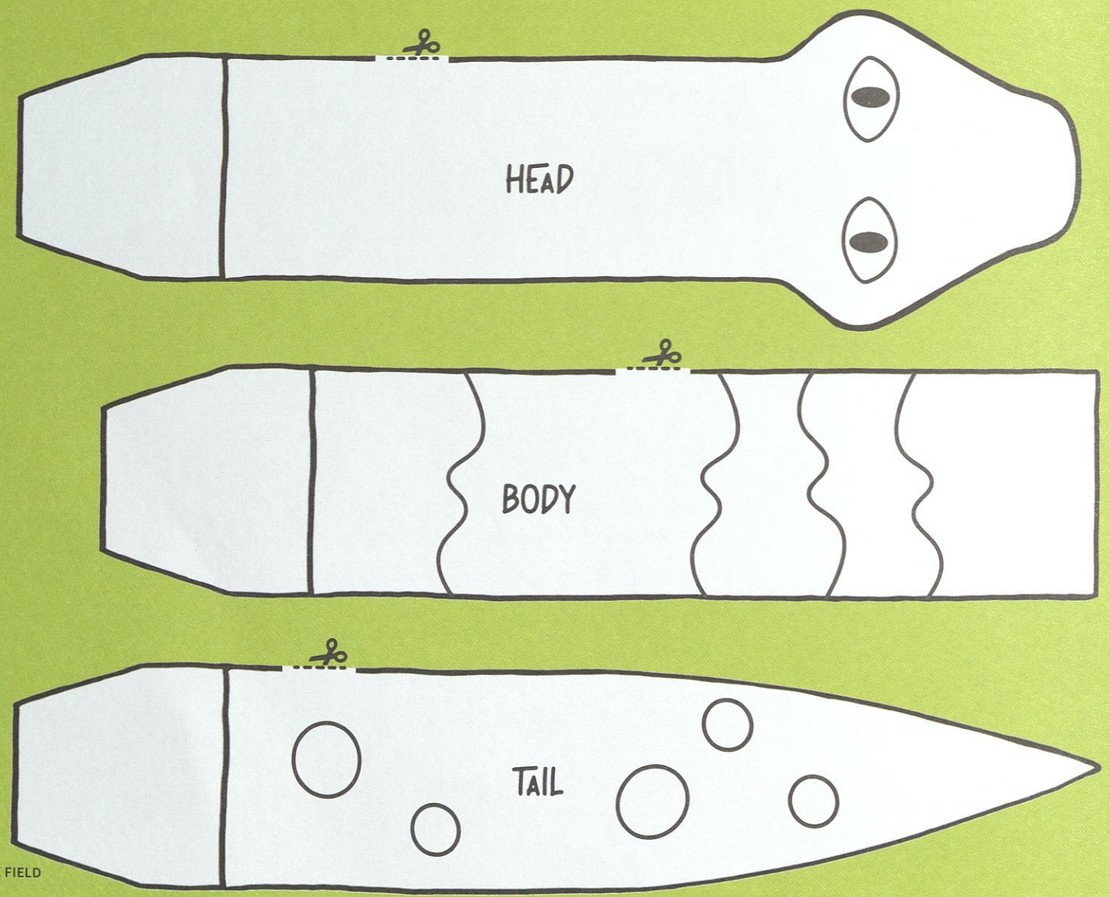
Make your own PAPER SNAKE!

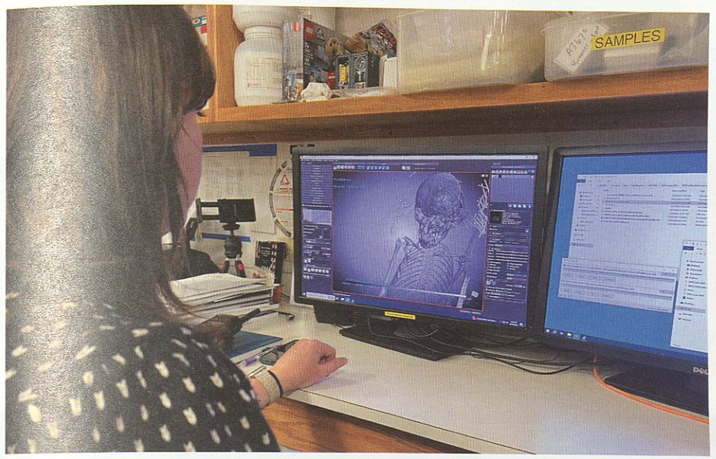
REMINDER! YOU'LL NEED:

- ○ Construction paper
- ○ Snake template
- ○ Scissors
- ○ Markers
- ○ Glue stick or tape

INSTRUCTIONS:

1. Cut out the template below.
2. Use the template to trace one head piece and one tail piece onto your construction paper.
3. You can use the body template to trace as many chain links as you want. Or you can cut your own paper strips! Make an odd number of body pieces so your tail is oriented correctly when you finish.
4. Before gluing or taping your snake together, use markers to add eyes, stripes, spots, etc.
5. When you are happy with your snake design, assemble by gluing or taping the tab at the end of the head piece under the snake's head to make a loop.
6. Add chain links by weaving strips into the loops and gluing them together until your snake is as long as you want it. Make sure to end with the tail piece!





SEEING THE PERSON INSIDE THE MUMMY

BY BELLA KOSCAL, PUBLIC RELATIONS COORDINATOR; AND **CHANDLER COHORN,** EDITOR

Mummified human remains offer us an incredibly personal insight into the lives of individuals who lived more than 3,000 years ago. New CT scans taken at the Field Museum are giving scientists fresh perspectives on mortuary practices and the lives and deaths of individuals in Ancient Egypt, as well as past museum conservation efforts. These scans allow scientists to virtually remove the barriers that stand between them and the mummified individuals, highlighting the deceased person's individuality and revealing what their community thought important enough to send with them to their eternal afterlives.

In a recent study spanning four days, 26 individuals were put through a mobile CT scanner. This technology created thousands of X-rays of the individuals, which are digitally stacked together to provide a 3D picture of what's inside. The scans gave researchers a peek behind the wrappings that have helped to preserve these people for more than 3,000 years.

"From an archeological perspective, it is incredibly rare that you get to investigate or view history from the perspective of a single individual," said Stacy Drake, Head of Anthropology Collections and Collections Manager of Biological Anthropology. "This is a great way to look at who these people were—not just the stuff that they made and the stories that we have developed about them, but the actual individuals who were living at this time."

The study of these individuals has just begun as scientists work to digitally analyze the physical bodies and their burial objects. Even so, scientists have already been able to answer some of the mysteries of the most famous remains at the Museum.

"Our standards of care for human remains emphasize them as individual people deserving of dignity and respect," said Drake. "Each of these people had lives and families, and the CT scans offer us a very personal snapshot into their pasts. The care with which these individuals were embalmed, and the personal details in their physical remains, reveal how little humanity has changed over the millennia."

Scientists will continue this study over the next year to discover more details that otherwise would have been lost to time.

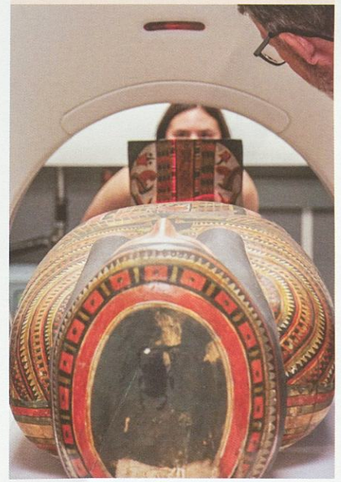
(Top) Field Museum scientists analyze the composite scans of a mummified individual to learn about who that person was. This practice allows scientists to carefully and respectfully study the mummies housed in the collections without causing any damage to the individual.

(Right) Conservator Nicole Schmidt and Senior Conservator JP Brown viewing the inner coffin of Lady Chenet-aa.

The Case of the Locked Cartonnage: Lady Chenet-aa

Lady Chenet-aa lived during the Third Intermediate Period of Egypt, during the 22nd Dynasty. That puts her remains at 3,000 years old and in remarkable condition. For years, Chenet-aa and her cartonnage, the paper mache-like funerary box that contains an embalmed body, have puzzled researchers. With no visible seam and only a small opening at the feet, there seemed to be no point of entry for Chenet-aa's body to have been placed in her cartonnage—this created a sort of locked-mummy mystery.

Thanks to the CT scans, conservators are now able to see the underside of the cartonnage for the first time. They now know that rather than the cartonnage being constructed around the body, the mummy was stood upright and then the cartonnage coffin was softened with humidity to the point it was flexible enough to mold around the body. Then a slit at the back was cut from head to foot, it was opened up, lowered down over the wrapped body, and closed again. Once it had been laced down the back, a wood panel was put in at the feet and then pegged in place to seal the cartonnage.



By Chandler Cohron, Editor

SUMMER OF SUE!

Twenty-five years ago, SUE the *T. rex* made its debut at the Field Museum. At more than 40 feet long and 13 feet tall at the hip, SUE is physically the largest *Tyrannosaurus rex* specimen discovered, and has been invaluable to science ever since it was found.

SUE is also the most complete *T. rex* ever found—around 90 percent. We have 250 of the approximately 380 known bones in the *T. rex* skeleton, including the furcula (wishbone) and gastralia (a set of rib-like bones stretched across the dinosaur's belly, believed to have helped SUE breathe). Scientists have scanned, 3D-printed, and drilled into SUE's bones to discover everything there is to know about these prehistoric apex predators. From SUE, we have discovered much about *T. rex* biomechanics and movement, how dinosaurs grew, and even how much a *T. rex* might have weighed. To this day, scientists continue to study SUE so much that the specimen's real skull has to be kept in a special exhibition case that allows it to be moved in and out of the exhibition.

SUE's story began in 1990, when Sue Hendrickson and a team of scientists uncovered the fossil during a commercial excavation trip north of Faith, South Dakota. Hendrickson spotted a few large vertebrae jutting out of an eroded bluff and followed her hunch that there were more beneath the surface. In the end, it took six people 17 days to extract the dinosaur's bones. Shortly after this landmark discovery, three parties embarked on a five-year custody battle that ended in a public auction in 1997. In the end, the Field Museum (with support from McDonald's Corporation, the Walt Disney World Resort, and several private donors), purchased SUE for a staggering $8.4 million—the most money ever paid for a fossil at auction. After SUE was purchased, 12 museum preparators spent more than 30,000 hours preparing the skeleton for display. On May 7, 2000 SUE was unveiled at the Field Museum and has been an icon of the Museum experience ever since.

Today, SUE has a special exhibition inside the *Griffin Halls of Evolving Planet*. Visitors can explore the Cretacious forest where SUE lived and discover what kinds of plants and animals would have lived in its environment. On your next visit to the Museum, stop by to meet SUE face to face and discover what's next in *T. rex* research.

The skull on SUE's mounted skeleton is a reconstructed cast made for display. SUE's real skull is far too heavy and important to research to be kept on display, so it has it's own special exhibition case that greets visitors as they first enter SUE's gallery.

CELEBRATE SUE ALL SUMMER LONG

This summer is all about SUE! Join us at the Field Museum and in the city for dino-mite events celebrating the most famous *T. rex* in the world. To learn more about these events and to purchase tickets visit us online at **fieldmuseum.org/our-events**

WEDNESDAY, AUGUST 6
Summer of SUE PlayLab Playdate
Field Museum, *Crown Family PlayLab*

FRIDAY, AUGUST 8
Summer of SUE Meet-a-Scientist
Field Museum, Grainger Science Hub

TUESDAY, AUGUST 12
SUE's Unearth Day!
Field Museum

FRIDAY, AUGUST 15
Party Like It's SUE00
Easy Does It, 2354 N Milwaukee Ave, Chicago, IL 60647

FRIDAY, SEPTEMBER 5
Dozin' with the Dinos SUE Birthday Special
Field Museum

SUE the T. rex is part of the Griffin Dinosaur Experience, made possible by the generous support of Kenneth C. Griffin.

NATIVE PLANTS IN CHICAGOLAND

1. WHORLED MILKWEED, *Asclepias verticillata* & seed pods
2. BUTTERFLY MILKWEED, *Asclepias tuberosa* & seed pods
3. PALE PURPLE CONEFLOWER, *Echinacea pallida*
4. POKE MILKWEED, *Asclepias exaltata* & seed pods
5. PRAIRIE MILKWEED, *Asclepias sullivantii* & seed pods
6. PURPLE CONEFLOWER, *Echinacea purpurea*
7. BLUE-STEMMED GOLDENROD, *Solidago caesia*
8. PURPLE PRAIRIE CLOVER, *Dalea purpurea*
9. JACOB'S LADDER, *Polemonium reptans*
10. FALSE SUNFLOWER, *Heliopsis helianthoides*
11. DOWNY PAGODA PLANT, *Blephilia ciliata*
12. COMMON MILKWEED, *Asclepias syriaca* with MONARCH, *Danaus plexippus*, & seed pods
13. SWAMP MILKWEED, *Asclepias incarnata*

COURTESY OF R. MIZOGUCHI. (C) FIELD MUSEUM OF NATURAL HISTORY. CC BY-NC 4.0.

ART, SCIENCE, AND THE NEXT GENERATION

BY CHANDLER COHORN, EDITOR

When you think of science, beautiful illustrations and artwork may not come to mind. However, for as long as people have been studying the natural world, artists have supported research. Sometimes scientists are even artists themselves! From the interactives in our exhibitions to hand-drawn illustrations created for research, art and science intersect every day at the Field Museum.

For the last two years, the Field's Keller Science Action Center has hosted an internship for early-career scientific illustrators. From August to December 2024, Rika Mizoguchi, a recent graduate of the University of Southern California with a degree in Fine Arts in Animation and Digital Arts, joined the team as an intern under the mentorship of Conservation Ecologist Catherine Hu and Field Museum's Artist-in-Residence Peggy Macnamara.

"I began working at the Field Museum as an ecologist in the summer of 2022, hoping there would be a way for me to incorporate art somehow," said Hu. "The opportunity appeared thanks to generous support from the Maxwell/Hanrahan Foundation to expand conservation impact through the arts."

Mizoguchi's primary project was illustrating 22 native plants and pollinators for the Beginner's Field Guide to Pollinators & Native Plants in Chicagoland, a companion to the Beginner's Field Guide to Pollinators in Chicagoland (see page 19), created by 2023 scientific illustrator intern Sorin Sukumaran.

Sukumaran, a graduate of the School of the Art Institute of Chicago, was the program's first intern and illustrated four detailed native bumble bee pieces and 24 watercolor paintings.

"My greatest hope is for the interns to have as many experiences as possible in the art and science worlds. The internship is short so every moment counts," said Hu.

Both Rika and Sorin studied plant specimens in the Museum's herbarium with guidance from the Botany Department. They visited local habitats, including the Rice Native Gardens, Burnham Wildlife Corridor, Beaubien Woods, and James Woodworth Prairie. They also showcased their work at major events, such as Return to Nature in 2023 and the Chicago Wilderness Alliance Congress in 2024. At least two more scientific illustrator interns are expected to join in the coming years, contributing to conservation outreach and visual storytelling about the Andes-Amazon and Chicago Wilderness regions.

See Rika, Sorin, and the team's work on the next page in the **Beginner's Field Guide to Pollinators in Chicagoland**.

(Top Left) Illustration of Jacob's ladder by Rika Mizoguchi.

(Top Right) Native plants in Chicagoland, created by Rika Mizoguchi.

Take me out and explore!

BEGINNER'S FIELD GUIDE

Pollinators in Chicagoland

Bees and butterflies get most of the credit for pollination but there is a wider and more interesting array of species pollinating flowers throughout the Midwestern United States. Here we provide illustrations of three example species for each group of pollinators, but each group is much larger than the few species we chose.

We hope this guide provides insight into pollinators that might be hiding in your garden or perhaps gives you a new perspective on a species that is hard to love. If you would like to find more examples of specific pollinators, you could try other guides at fieldguides.fieldmuseum.org/ or take a picture and upload it to iNaturalist.

Legend: M = Male, F = Female. *Illustrations are not to scale.*

Bees

The European Honey Bee is the most recognizable bee species, but it is actually native to Europe, Africa, and the Middle East. These bees play an important role in agriculture and have become part of our pollination cycle. However, there are hundreds of bee species native to our region that have evolved specific relationships to pollinate our native plants including blueberries, cranberries, and blackberries.

European Honey Bee
Apis mellifera

Two-Spotted Bumble Bee
Bombus bimaculatus

Bicolored Striped Sweat Bee
Agapostemon virescens

Butterflies

Butterflies are the pollinator group that most often evokes a sense of beauty and wonder. All butterflies and moths begin life as caterpillars and many caterpillars will only eat a specific plant, called a host plant. Monarch Butterflies have a very specialized host plant relationship with milkweed (Asclepias spp.). Other butterflies feed on a wider range of plants such as the carrot family (Black Swallowtail) and the mustard family (Cabbage White).

Monarch Butterfly
Danaus plexippus

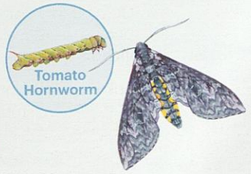
Black Swallowtail Butterfly
Papilio polyxenes

Cabbage White Butterfly
Pieris rapae

Moths

Many people are surprised to know moths are pollinators; some species are even busy pollinating flowers overnight. You may not be familiar with the highly camouflaged Carolina Sphinx Moth, but you might have seen its caterpillar, a common garden pest called the tomato hornworm. Other moths such as the Hummingbird Clearwing are brightly colored and might be mistaken for other pollinators.

Celery Looper Moth
Anagrapha falcifera



Carolina Sphinx Moth
Manduca sexta

Hummingbird Clearwing
Hemaris thysbe

Wasps

Wasps are often seen as pests at picnics and when their nests conflict with our recreation spaces. We frequently encounter wasps when they are killing other insects, such as cicadas, to feed to their own young. However, adult wasps carry pollen from flower to flower and drink nectar to fuel their bodies. While they are related to bees and look similar, wasps usually have an hourglass figure with a "waist."

Eastern Cicada Killer
Sphecius speciosus

Great Black Wasp
Sphex pensylvanicus

Yellowjacket
Vespula spp.

Flies

Sometimes flies annoy us by their sheer numbers but that is exactly what makes them important pollinators. As adults many flies consume both pollen, as a source of protein and fat, and nectar, as a source of sugar. While the fly searches for food, pollen collects on its body and is deposited on a new flower.

Transverse-Banded Flower Fly
Eristalis transversa

Common Green Bottle Fly
Lucilia sericata

Tachinid Fly
Archytas apicifer

Beetles

Beetles are often overlooked as pollinators; however, they coexisted with dinosaurs long before better-known pollinators evolved. Beetles are a diverse group that sometimes eat holes in flower petals as they pollinate. Flowers that have evolved specifically for beetle pollination tend to have thick petals; the best local examples are magnolias.

Flower Tumbling Beetles
MORDELLIDAE

Goldenrod Soldier Beetle
Chauliognathus pensylvanicus

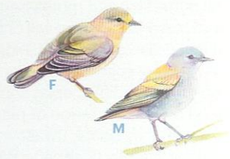
Spotted Pink Lady Beetle
Coleomegilla maculata

Birds

Hummingbirds are particularly adapted to feed on nectar, with long bills, tubular tongues and the ability to hover. More than 300 species are found throughout the Americas, but Ruby-throated Hummingbird is the only species in eastern North America. Other Chicago birds that feed on nectar and act as pollinators, particularly at flowering trees in spring, include orioles, like Baltimore Oriole and some warblers, for example Tennessee Warbler.

Ruby-Throated Hummingbird
Archilochus colubris

Baltimore Oriole
Icterus galbula



Tennessee Warbler
Leiothlypis peregrina

Promoting Our Native Pollinators

At the Field Museum we promote planting species that are native to your region. Native plants have evolved along with their native pollinators for thousands of years. Diverse and healthy ecosystems are the foundation of landscapes that will be better able to adapt to climate change. Over time some non-native pollinators have become embedded into our local ecosystems and now perform a crucial role in providing pollination services to native plants and food crops. Some of these species have been included in this guide; however, our goal is always to support native pollinators first because they need the most help. Your local native plant society is a great place to get started planting a garden.

Other Resources:

1. Holm, Heather. Pollinators of Native Plants: Attract, Observe and Identify Pollinators and Beneficial Insects With Native Plants Pollination Press LLC, 2014.
2. illinoisplants.org
3. Selected Insects in Your Midwestern Native Garden Field Museum Field Guide

FIELD MUSEUM

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Acknowledgments: Maureen Turcatel & Bruno de Medeiros.
Artwork: Sorin Sukumaran
Design: Alicia Diaz and Bark Design

Learn more by checking out field guides from the library and downloading free ones at **fieldguides.fieldmuseum.org**

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Coming Soon!

AFTER THE AGE OF THE DINOSAURS

Step into a world reborn. ***After the Age of Dinosaurs*, opening August 29, 2025**, explores the fascinating story of life after the extinction of the dinosaurs, when giant snakes, tiny horses, walking whales, and strange primates ruled a tropical Earth. Discover how surviving species reshaped the planet in surprising and sometimes alien ways. This immersive experience reveals a chapter in Earth's history that you never knew you were missing.

MEMBERS SEE IT FIRST!

PREVIEW DAYS:
August 27 & 28—No RSVP, just show your card

OPENING NIGHT:
September 3—Evening panel + exhibit access, reservation required

SUMMER 2025

Beach Goers' GUIDE TO LAKE MICHIGAN

You may not find many shells at the beaches around Lake Michigan, but you can find tons of rocks and fossils—if you know what to look for. Take a look at some of the more common geological treasures that can be spotted around the lake!

By Paul Mayer
Collections Manager of Fossil Invertebrates, Gantz Family Collections Center

CONCRETE is a man-made product. This piece was eroded and polished by the surf and sand and can be difficult to tell apart from a conglomerate, a sedimentary rock.

ZEBRA MUSSELS are small striped shells from a modern bivalve that has invaded North America.

CRINOIDS look like small discs that sometimes have holes in their centers, like Cheerios. They're from the stems of an animal that looks a little like a flower, but is really a relative of the starfish. The discs were stacked together to form a long stalk that attaches the animal to the sea floor.

STROMATOPORIDS are an extinct calcareous or stony sponge. They were the dominant reef builders in the Silurian Period 430 million years ago.

SLAG is often black, shiny, and sometimes almost iridescent. It probably came from burning coal on ships or from smelting iron.

PETOSKEY STONES are an extinct fossil coral that lived 380 million years ago. The Petoskey stone also happens to be the official state stone of Michigan. These corals are called colonial rugose corals and lived in the Devonian Period. The fossil corals have eroded out of the rock and are polished by the waves and sand.

HONEYCOMB CORALS are another type of extinct coral called favositid corals. The openings for the coral polyps are much smaller than in Petoskey stones and look like a lace pattern draped over the rock.

GRANITE is an igneous rock that formed deep underground and is abundant in northern Wisconsin, the Upper Peninsula of Michigan, and Ontario. The red or pink mineral in granite is potassium feldspar.

JASPER is actually an orange to tan color variety of chert, which is microcrystalline quartz.

ORGAN PIPE CORALS or syringoporoid corals are another extinct group of coral that can be spotted on the beach.

Please make sure to follow all rules and regulations when collecting fossils and geologic specimens, and respect the rights of property owners.

(Left) Herbarium specimens track the frequency of super blooms but they can also be a source of seeds and genetic tissue to study plants that are rarely seen.

(Below) Botany staff lay herbarium sheets on a conveyor belt to be scanned and digitized.

UNPRECEDENTED SUPER BLOOM AT THE FIELD MUSEUM

BY KIMBERLY HANSEN, PHD, COLLECTIONS MANAGER OF ANGIOSPERMS, GYMNOSPERMS, AND ECONOMIC BOTANY, GANTZ FAMILY COLLECTIONS CENTER

Deserts are a difficult place to be a plant. One common adaptation for surviving the long, hot, and extremely dry summers is to avoid them altogether! Desert annuals bloom and set seed during the short spring season when water is available and temperatures are favorable, then die back when the harsh summer conditions set in. When spring arrives again a small percentage of these seeds are able to germinate, and the process repeats. Once every decade or so a particularly wet winter occurs, allowing a much higher percentage of the seeds to burst into life and delight us with a super bloom. The deserts of the southwestern United States experienced a super bloom in 2023. Similarly, the Atacama Desert in Chile, the driest desert on earth, experienced one in 2024. The Flowering Plant collection in the Field Museum's John G. Searle Herbarium is experiencing its own super bloom in 2025!

The Searle Herbarium includes nearly 2.4 million pressed and dried flowering plant specimens. The collection is a critical resource for scientists studying patterns of biodiversity, landscape changes, climate change, and even fighting crime. Some studies inspect the plant itself, others extract information contained on the collection notes label, and many more rely on both. Historically, scientists had to visit the herbarium or borrow the specimens to obtain this information. In the 21st century, herbaria are digitizing their collections (photographing specimens and transcribing the collection labels) in an effort to increase access to specimens and facilitate scientific research.

In 2025, the Searle Herbarium is experiencing its equivalent to an extraordinarily wet winter and is expecting a digital super bloom by the end of the year. Each day thousands of specimens from the Flowering Plant collection are being imaged using a conveyor belt system and transcribed using a combination of Artificial Intelligence and human review. These new approaches for digitization utilize recent advances in technology and will result in the digitization of 500,000 specimens, nearly doubling the efforts of the past two decades in just a few months! This ambitious project focuses on specimens collected in Latin America, since numerous botanical expeditions, sponsored or co-sponsored by the Museum, have established the Field as one of the world's preeminent depositories of Central and South American, and Caribbean specimens. The results of this collaborative effort will be available to scientists and the public on the Museum's Collections website by the end of 2025.

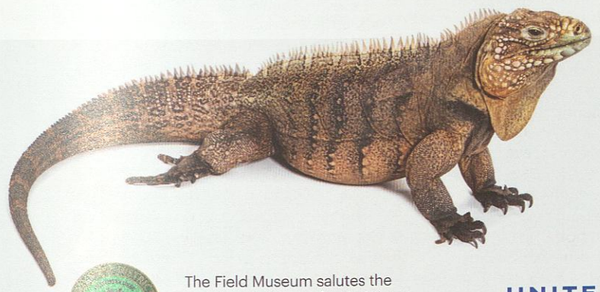
Define the Future.
RENEW TODAY!

Membership at the Field Museum is more than a visit—it's connection to discovery, science, and shared purpose.

From 75 years of Members' Nights to new experiences everyday, members have been the backbone of the Field Museum.

Today's members are as diverse as Chicago itself, enjoying digital perks and behind-the-scenes access. Every membership fuels the Field's global research, conservation, and public programs. As we look ahead, membership is evolving into deeper, more personal engagement—with members shaping the Museum's future. The Field Museum won't just be a place you visit—it'll be something you're part of.

Renew with us and help write what comes next:



The Field Museum salutes the people of Chicago for their long-standing support of the Museum through the Chicago Park District.

UNITED AIRLINES Official Airline of the Field Museum

Museum Hours

The Field Museum is open from 9am–5pm every day except Thanksgiving and Christmas Day, with last admission at 4pm. For special hours, parking, and public transportation options, visit **fieldmuseum.org/visit**.

ILLINOIS ARTS COUNCIL AGENCY

This program is partially supported by a grant from the Illinois Arts Council Agency.

For up-to-date information for all member events, visit **FIELDMUSEUM.ORG/MEMBEREVENTS**

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Make a gift in support of the Field Museum!

Coming May 2026

Pokémon at the Field Museum

We're thrilled to announce that *Pokémon Fossil Museum* will make its North American debut at the Field Museum in May 2026! This one-of-a-kind experience invites visitors to compare fossil Pokémon like Tyrantrum and Archeops with real-world fossils, including SUE the *T. rex*.

Members See it First.
Members See it Free.
Renew now and stay ready to experience what's next.

MAJOR SPONSOR:
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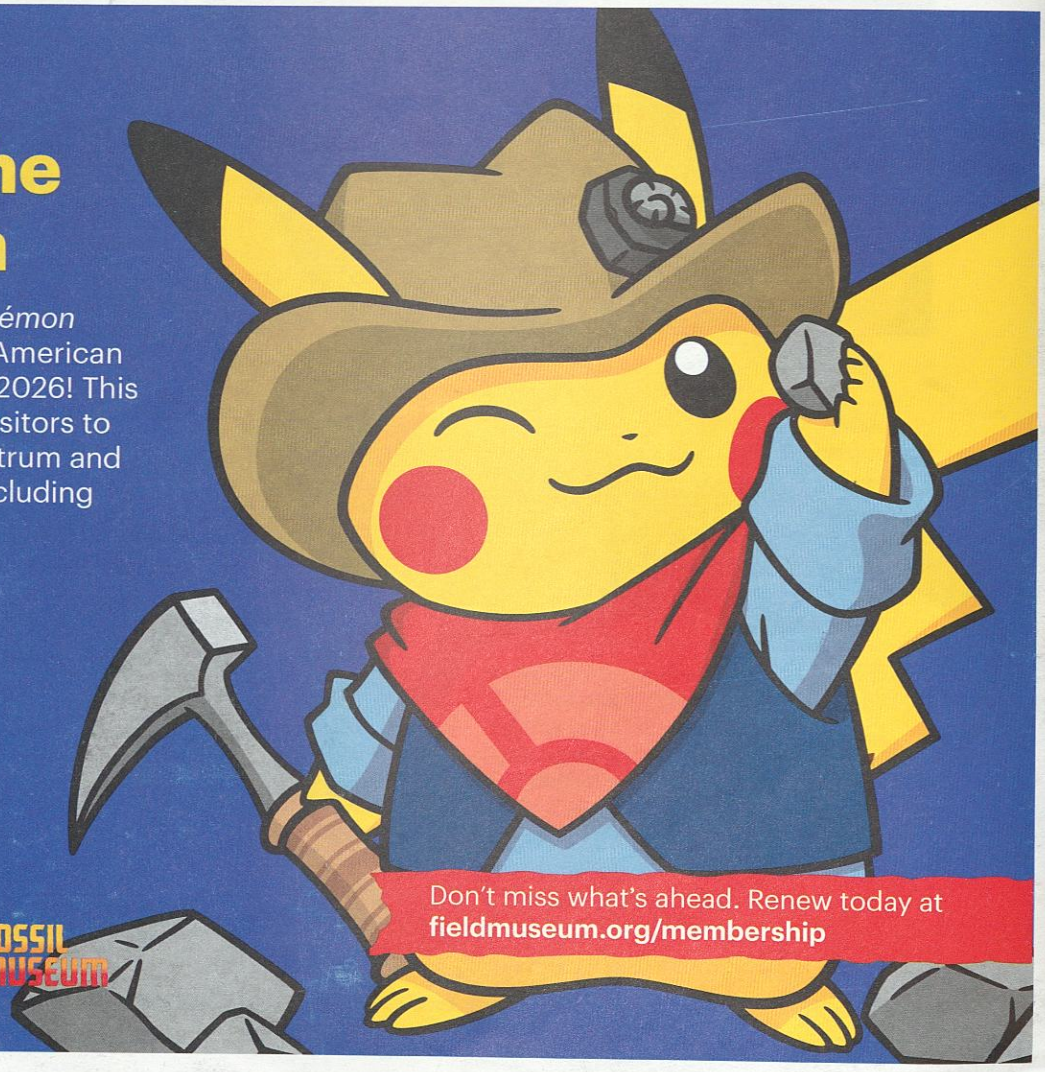
FIELD MUSEUM

Special Exhibition
POKÉMON FOSSIL MUSEUM



Don't miss what's ahead. Renew today at
fieldmuseum.org/membership